National Institute of Environmental Health Sciences

# Temperature, air pollution and total mortality during summers in Sydney, 1994-2004

**Author(s):** Hu W, Mengersen K, McMichael A, Tong S
**Year:** 2008
**Journal:** International Journal of Biometeorology. 52 (7): 689-696

**Abstract:**

This study investigated the effect of temperature and air pollutants on total mortality in summers in Sydney, Australia. Daily data on weather variables, mortality and air pollution for the Sydney metropolitan area from 1 January 1994 to 31 December 2004 were supplied by Australian Bureau of Meteorology, Australian Bureau of Statistics, and Environment Protection Agency of New South Wales, respectively. We examined the association of total mortality with weather indicators and air pollution using generalised additive models (GAMs). A time-series classification and regression tree (CART) model was developed to explore the interaction effects of temperature and air pollution that impacted on mortality. Our results show that the average increase in total daily mortality was 0.9% [95% confidence interval (CI): 0.6-1.3%] and 22% (95% CI: 6.4-40.5%) for a 1°C increase in daily maximum temperature and 1 part per hundred million (pphm) increase in daily average concentration of sulphur dioxide (SO2), respectively. Time-series CART results show that maximum temperature and SO2 on the current day had significant interaction effects on total mortality. There were 7.3% and 12.1% increases in daily average mortality when maximum temperature was over 32°C and mean SO2 exceeded 0.315 pphm, respectively. Daily maximum temperature was statistically significantly associated with daily deaths in Sydney during summers between 1994 and 2004. Elevated daily maximum temperature combined with high SO2 concentrations appeared to have contributed to the increased mortality observed in Sydney during this period. © 2008 ISB.

**Source:** http://dx.doi.org/10.1007/s00484-008-0161-8

## Resource Description

**Exposure :**

weather or climate related pathway by which climate change affects health

Air Pollution, Meteorological Factors, Temperature

**Air Pollution:** Interaction with Temperature, Ozone, Particulate Matter, Other Air Pollution

**Air Pollution (other):** CO; NO2;SO2

**Temperature:** Fluctuations

**Geographic Feature:**

resource focuses on specific type of geography

Urban

**Geographic Location:** ☒

resource focuses on specific location

Non-United States

**Non-United States:** Australasia

**Health Impact:** ☒

specification of health effect or disease related to climate change exposure

Morbidity/Mortality

**Resource Type:** ☒

format or standard characteristic of resource

Research Article

**Timescale:** ☒

time period studied

Time Scale Unspecified